1897.

ANNUAL REPORT

OF THE

Medical Officer of Health,

TO THE

BEACONSFIELD

URBAN DISTRICT COUNCIL.

C. E. Hanslow, Printer, High Street, Beaconsfield.

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SUMMARY OF WORK DONE DURING 1897.

(1.) Drainage of the Town. The drainage of the town was regularly and systematically inspected. Although attempts have been made by the Urban Council, and by private owners to remedy the existing defects, I cannot say that much real progress has as yet been made. A radical improvement is however contemplated by the Council. Inspection revealed on several occasions that the Filtering Beds on the West and South sides were practically useless, if one regards as a test of their utility the condition of the effluents from them. In the earlier part of the year these effluents were very foul and the emanations from the ditches receiving them were most offensive and dangerous. On this account a local proprietor undertook to more thoroughly filter the sewage passing on to his estate. Two new beds were constructed as described elsewhere in this report, and for some months these answered their purpose well; but about July and August the filtering seemed to fail, and the beds themselves became obnoxious to passers by on the Windsor and Burnham road, and the ditches again become foul. This lessened again as the weather become colder. The same trouble arose about midsummer with the filtering bed at the west side of the town, and the Urban Council had all the old filtering materials removed and fresh material put in. Some slight structural alterations were also made. The good effect of this was noticed for a few months, but eventually the old troubles reappeared, though less in degree.

It is manifest that much larger areas would be necessary for dealing with the sewage received by these beds; and it is extremely injudicious to have any deposits of sewage at all so near the town and public roadways.

As will be seen elsewhere in this report there are schemes under the consideration of the Council to improve the existing drainage; and also a scheme for making a complete new system of sewerage.

(2.) Inspections of the cottages where the two cases of enteric fever occurred. In the first case (Bower Wood Cottages) some further improvements in the drainage were advised, and partly carried out subsequently by the owner.

The origin of this case was not traceable to any previous case; and it was distinctly proved that it could not have come from a case at Hall Barn Stables, which occurred during November, 1896. The infection either came from a faulty privy, or from some source outside Beaconsfield.

The second case of enteric fever occurred in Barrack Yard. In this case again it was impossible to find an origin of the disease in a previous case, nor in the milk or water supply; but it is extremely probable that the man caught his disease while cleaning out a privy-pit and cesspool which had not been cleaned out for several years. This is referred to elsewhere in this Report. The usual precautions were taken in both these cases, and attempts were made to destroy the infective quality of the excreta by means of strong solution of corrosive sublimate before burying them (destruction by fire not being feasible) as the water supply to the adjacent cottages in at least one of these cases might easily have been infected. The inhabitants in the adjacent cottages were strongly urged to boil all water used for cooking and drinking purposes. There was no spread of infection from either case.

(3.) By the courtesy of the proprietors permission was accorded to the Council's Officers to inspect the sanitary arrangements in all alterations made in existing buildings, and in one new villa residence. The work was found to have been carried out in a workmanlike and thorough manner, and in a case where a soil-pipe ventilator was in too close proximity to a bed-room window a promise was given to amend the defect.

(4.) The Bakehouses have been inspected. They were found to be in the same condition as last year; and although no glaring defects were found, one would like in several cases to see the dough prepared and the bread baked under more generally cleanly conditions. To see dusty walls and loose distemper and whitewash, in places where it might fall into the dough, and to see the water of impure wells used to mix with the flour, are sights which do not conduce to give one a relish for the product of the bakehouse.

(5.) The Milkshops and Dairies and Cowsheds have been inspected. Here a very great improvement is necessary. The cows in but few cases are kept sufficiently clean ; sufficient attention is not paid to cleansing the udders and teats before milking ; the milk is not stored in dairies by itself, so as to prevent contamination by odoriferous articles in its vicinity ; and in several cases the so-called dairy is too near the ordinary living rooms.

(6.) The Slaughterhouses. In so small a town as Beaconsfield, one is diffident about suggesting a public abattoir ; but there is only one slaughterhouse worthy of the name, and that is but seldom used.

(7.) The Graveyards and Burial Grounds. As yet nothing has been done towards improving the state of affairs adverted to in the 1896 Report. Public interest, however, has been excited in the question ; and there seems to be a general feeling that things cannot be allowed to continue as at present.

(8.) An inspection was made at Amersham of a portion of ground which it was proposed to use for the disposal of the Amersham sewage. The inspection was made with a view of ascertaining whether there was a possibility of the sewage from this ground reaching the bore-hole of the Amersham, Beaconsfield and District Waterworks Company, and contaminating the strata which furnish the Company's water. The Inspection revealed the fact that such contamination from soakage of surface sewage might easily take place, through the large fissures universally present in the chalk formations, one or more of which might well be not many feet below the surface; which surface would eventually be loaded with sewage matters. A representation to this effect was made to the Water Company. The scheme of using this ground for sewage purposes was in the end abandoned by the Amersham Authorities.

(9). Various special inspections were made of different cottage properties. Defective drains, both surface and pipe, were the chief causes of complaint. In several cases repairs were carried out by the owners, and satisfaction given to the Council's Officers. In several other cases it was evident that nuisances would arise from time to time, unless such radical changes were made, that if insisted on in one case it would only be justice to equally insist on similar changes all over the town.

(10). The ditches and sewage channels on the east side of the town were specially inspected with the idea of reporting as to the suitability of making New Pond a bathing place for the town. It was evident that sewage matter could easily reach the proposed bathing place, and in view of this possibility the sewage channels were diverted.

The result, however, of the experiment of converting the pond into a bathing place was not an unmixed success, as the water soon became foul, and mud soon reformed on the bottom of the pond.

A pond of this size cannot be expected in dry weather to supply all the bathing needs of a town even of the size of Beaconsfield, unless it be converted into a proper swimming bath with an impervious bottom, and with a pure water supply, and a proper discharge pipe or outlet.

(11). Farmyards. Those adjacent to the town have been inspected. Despite the popular belief that the smell of manure is wholesome, surely manure heaps, and stagnant pools of urine in close proximity to the farmer's front door and dwelling house, cannot be more wholesome than other kinds of decomposing matter, although less objectionable to many nostrils. And again to have surface wells in ground the vicinity of which is sodden with the products of the farmyard cannot produce a pure drinking fluid.

ACCOUNT OF THE SANITARY CONDITION OF THE DISTRICT.

The most important event, from a sanitary point of view, during 1897 was the completion of the new Waterworks Scheme, so as to render a pure water supply available for Beaconsfield. The scheme is due to private enterprise. The water is derived from the chalk by a boring and tube-well at Amersham Common, five miles from Beaconsfield, The well tube is 60 feet long, and reaches down to the chalk strata, and the well is 150 feet deep. A practically inexhaustible supply has been obtained. The water is pumped to a covered reservoir at Coleshill, about 70 feet higher than Beaconsfield. The reservoir is twelve feet deep and is capable of containing 100,000 gallons. The water in the reservoir stands usually at present at about 9 feet. A five-inch pipe conveys the water to Beaconsfield, direct from the reservoir. The supply is constant—a very important point according to modern views, as it does away with the necessity attending an intermittent supply, of house storage of water. Such storage is always liable to pollution. The company is to be commended for their wisdom in giving a consant supply, as it is generally admitted that the argument that a constant supply entails much waste is unsound. With good fittings the waste is estimated to be really less than with an intermittent supply. The Company, being a private one, may be trusted to look after their own interests in the matter of good fittings. It is estimated that a supply of about 30 gallons per day per individual is available. This is an ample supply so long as Public Baths or Washhouses, or large manufactories do not exist.

Analysis of the water, made for the Company by an expert water-analyst, will be found in an appendix to this report.

This analysis I have found to correspond very closely with analyses made by myself. One of a series of my analyses will be found also in an appendix.

The water pressure, and supply at the taps is excellent.

Most of the larger houses in the district have been provided with the new supply. One large proprietor of cottage property has had the water laid on by stand-pipes for all his cottages. His action might well be imitated by other cottage proprietors, as surely an ample supply of pure water is almost a duty for those who have the welfare of their tenants at heart, and I have frequently had opportunities of noting the great impurity of the water of the shallow surface wells of the place. The new supply, although a hard chalk water, is found to be much softer for washing purposes than the shallow well water. Water of shallow surface wells is nearly always very hard.

At this point I may well point out the most important qualities of the new water from a health point of view.

The total absence of *free ammonia* indicates absolute freedom from sewage pollution or contamination by any dangerous impurity. This taken in conjunction with the fact that the *albuminoid ammonia* present is very small in amount, and is less than that often found in pure chalk water, is a guarantee of the organic purity of the water. The presence of albuminoid ammonia in no way in this case indicates pollution; for if one considers the manner in which chalk was originally formed, it could scarcely escape containing some albuminoid material. The small amount of *oxygen absorbed by the organic matter* also indicates the great purity of this water, and is about the amount corresponding to the albuminoid ammonia present.

The amount of *Chlorine* present in a pure chalk water is what one would expect, and again does not indicate impurity, and is lower than the permissible limit in a potable water.

The "*dissolved solids*" seems high, but it is to be remembered that this is chiefly chalk in solution and is harmless in this quantity. The fact that the *hardness* is nearly all *temporary*, that is to say, that on boiling, the water becomes very soft (only 3·2 degrees being left), indicates the utility of the water for domestic purposes. Altogether the water is a very pure one, and well suited for all "domestic and dietetic purposes."

The water stands well when compared with other supplies.

Take for example the water supplied to Glasgow from Loch Katrine, noted as being one of the purest waters in the world. In this case I will only consider the important ammonia and albuminoid ammonia, as Loch Katrine water is a soft water, being an enclosed lake in a mountainous district.

	LOCH KATRINE.	BEACONSFIELD.
Free Ammonia	0.01	none.
Albuminoid Ammonia ...	0·0143	0·024.

And the presence of the 0.0143 parts of albuminoid ammonia in Loch Katrine water is of far greater significance than the slightly greater 0·024 parts in Beaconsfield supply, as Loch Katrine is partly fed by mountain streams carrying organic matter into it, whereas in the Beaconsfield supply this cannot take place.

Take again as an instance of a deep chalk well, one near Saffron-Walden, and contrasting this with the Beaconsfield supply, and with the water supplied by the Kent Company to South East London, also obtained from deep chalk wells, we have :

	SAFFRON-WALDEN.	KENT COMPANY.	BEACONSFIELD.
	Parts per 1,000,000.	Parts per 1,000,000.	Parts per 1,000,000.
Free Ammonia	1·201 ...	0·01 ...	none.
Albuminoid Ammonia ...	0·06 ...	0·02 ...	0·024.
	Grains per Gallon.	Grains per Gallon.	Grains per Gallon.
Nitrogen as Nitrates	5·00 ...	no return. ...	0·104.
Chlorine	5·80 ...	1·75 ...	0·85.
Oxygen absorbed by Organic Matter	0·003 ...	no return. ...	0·003.

These two waters have been selected for comparison as being derived from similar sources as the Beaconsfield supply, and also because the Kent water is noted as being the purest of the London supplies, and is an excellent example of a pure deep chalk water. A glance at the figures shows how very pure the Beaconsfield supply is, and it has another advantage over the Kent water in that it is not nearly so hard, and loses most of its hardness on boiling, which the Kent water does not.

It is to be earnestly hoped that the presence of this extremely pure supply will soon overcome the prejudices of those who prefer still to use shallow well water, which can never bear any comparison with this water; and that we shall have before long increased health and vigour as an evident result of pure water.

I would suggest that some means be adopted in the near future for Street Watering. With a plentiful supply of water available, there ought to be no hindrance to carrying out some plan of systematic street-watering during dry weather. I am convinced that damage is done to property, and harm done to the public health, by the clouds of dust which in this light surface soil so soon forms after heat or drying winds. Much impurity and multitudes of microbes can enter the human body by dust inhaled and swallowed. Food exposed for sale forms a ready snare for this dust, and can be thus contaminated. Those who think about such things will see at at once that dried manure, droppings, and other filth must form a large proportion of the dust which is so plentiful and freely distributed in dry weather. Let the High Street at least be watered, as on it is the most dust and traffic. Could a Watering Cart be provided by the Council? If not, would not the townspeople subscribe for the purchase of a Watering Cart, to be handed over to the Council, and to be worked and looked after by their servants? Let us exorcise this dust-fiend somehow!

During the latter half of 1897 consideration of the state of the town drainage occupied the attention of the Council, and it was decided to take the opinion of an engineering expert on the subject. It was evident from the report of this expert that there were two feasible plans for remedying the defects of the present drainage.

(1.) An entirely new drainage scheme.

(2.) A scheme which I will call the reconstruction scheme, for using part of the present drainage system by disconnecting the present system from the existing filtering beds, and connecting the three main sewers, at the West, South and East sides of the town with one main sewer successively, and carrying this to an outfall towards the South East of the town, and there utilising some land for the disposal of the sewage.

As the matter is still *sub judice* it would be unfair to criticise these schemes; but I would suggest that as the difference in cost between the two schemes cannot be great, it would be more advisable to adopt the first scheme ae being more thorough. But if the second scheme be adopted then surely it is wiser to have the sewage carried to the furthest distance suggested by the engineer, and thus keep its unavoidable nuisance well away from dwellings and public roads.

And in connection with this question of a choice between a new scheme and a re-construction scheme it is well to remember that although the main drain along the High Street to London End is believed to be in good order, and was carefully and well laid originally, some other main drains, such as that from Shepherd Lane across Aylesbury End and leading down to the Wattleton Filtering Bed, are not nearly in such good order, and had not the same care spent on them when first laid. Again in the reconstruction scheme use would be made of old brick arch drains which still exist in the town for sewage-carrying purposes, whereas such drains are universally condemned now-a-days as sewage carriers, and are only permissible for carrying off the storm-waters for which they were intended.

The state of the Filtering Beds has already been adverted to, and the Council have made some advances in their efforts to abate the nuisance from these filters. The one on the South side was entirely reconstructed. The old bed was dug out, two new beds were formed, and so arranged that the sewage could be diverted from one to the other to permit of one being thrown out of use while the deposit on it was removed. These new beds have gone a long way towards removing the nuisance; but in dry weather even now offensive smells reach the roadway and point to the fact that despite the labour they involve regularly they are not large enough to render entirely innocuous all the sewage they receive. The quality of the effluent has however greatly improved, although in dry weather there is stagnant and consequent offensive smells.

One notes with satisfaction the increasing tendency towards substituting pail closets for the privies and privy pits originally so common; and here again the Council have made an advance; for some sets of pails being found frequently in a state of overflow, the scavenger was directed to have them emptied more than once a week, and the good result is now very apparent. I would suggest as a further useful measure that the scavenger have access to a hose-pipe attached to the new water-supply, that he may thoroughly wash out the pails before returning them to their places. This would not only be a cleanly measure, but it would prevent the just complaint that the pails are more offensive when just emptied than when full. Could the Council see their way to providing the scavenger with a yard for this purpose, somewhere on the outskirts of the town? Recent scientific research seems to show that although disease germs such as those of typhoid fever are not readily found in fresh sewage, being in some way destroyed, yet in old accumulations of filth not often disturbed, and in receptacles coated with old filth deposits, these bacilli are comparatively easily identified. And here I would point to the fact that the fatal case of typhoid fever in 1897 apparently originated in the man having emptied a privy pit which had not been cleaned out for several years.

The success of the bacteriological or biological disposal of sewage, as seen at Exeter, and now at many other places in the country is well worthy of the consideration of the Council, as affording a ready means for purification of sewage on a comparatively small area, and at small cost.

A very noteworthy feature of the year has been the freedom of the town from dangerous infectious disease, with the exception of the two cases of enteric fever mentioned. There has not been a single notification of Scarlet Fever; nor as far as I am aware has a single case of Measles occurred. Whooping Cough, Mumps, and Influenza have been very prevelant; but no deaths have been attributed to any of these diseases. With regard to early information of the outbreak of such diseases as Measles and Whooping Cough it is regrettable that the Medical Officer of Health has no means of discovering the first cases so as to prevent a general epidemic, as no notification of these diseases is in force. Early knowledge of the first cases might enable the authorities to prevent an epidemic, and might also obviate the necessity for closing the elementary schools, a measure so often unavoidable in country districts. The closure of a school is a step not to be lightly undertaken, as it entails many disadvantages, monetary and otherwise to the community.

I would also welcome some regulation of the council enabling its officers to inspect all buildings, as regards their sanitation; for any alterations of plan deemed necessary by the Council might be made before the building was completed, and the expenses of subsequent alterations saved to the builders.

Much yet remains to be done in improving the cottages. More light, more ventilation, better sanitation, less damp in walls and floors are indicated; and further, overcrowding is still very common, but I do not for a moment suggest that the Council are to bear the blame for all this; for the cottagers themselves are largely responsible for much of it.

I think too that the day will come when to make the foundations and walls of our houses drier, the ground water will be lowered by tapping the clay basin which holds the water, at one or more points down the hill on which the town stands. This of course would lower the water in the wells; but with a pure supply available, ought not the well-being of the many to be considered before the unwillingness of the few to take the new supply.

BIRTH AND DEATH RATES.

Thirty-nine births occurred during 1897, 21 being males and 18 females. This gives a birth rate of 23·32 per 1,000 living. This is considerably less than the birth-rate of the whole country, and is probably due to the proportion of the population above and below the reproductive ages.

Twenty-eight deaths occurred during the year, 17 being males, and 11 being females, giving a death rate of 16·67 per 1,000 living. This mortality is much too high for a country district, but the whole data are too small for any exact calculations based on them to have much value. As far as can be judged the deaths of genuine residents in the town who have died in other places is almost balanced by the deaths of non-residents, which have taken place here.

An analysis of the ages at death shows that 5 were deaths of infants under 1 year of age; and of these one lived but a few hours being premature, and another was that of an infant which had had a separate existence from its mother, and was found dead by the roadside. Hence the mortality of infants under one year has not been so high as usual. Again no less than 11 out of the 28 deaths were deaths of persons of 65 years and upwards, and of these 8 were over 70 years. Too much importance however must not be attached to the fact that so many deaths were those of aged people; for it must be borne in mind that the proportion of adults from 20 to 45 years in the town is below the average, as persons of these ages are attracted to the large towns.

Four deaths were from phthisis, and it would only be fair to reckon a fifth death from phthisis which took place in London of a resident here, who had contracted the disease here. Not counting this fifth case, the phthisis mortality stands, at 2·41 per 1,000 living. Now this is far too high for a small country town; as that for the whole country is only 1·64 per 1,000. If one may fairly argue on the figures, for the moment disregarding the smallness of the town, it would point to bad hygiene generally, damp-soil, damp cottages, overcrowding, want of light and ventilation and want of cleanliness.

There were two deaths from cancer, and dangerous infectious disease was responsible for one death only.

These calculations of Birth and Death Rates are based on an estimated population of 1660 This estimation is probably not far short of the actual number. The usual method of basing calculations on the two last decemial census returns would lead to grave error in the case of Beaconsfield, as at the time of the last census several accidental circumstances served to unduly swell the census roll.

Gentlemen of the Urban Council of Beaconsfield, allow me in concluding this Report to thank you for the support you have given me in my attempts to carry out Sanitary reform during the past three years. Allow me also to congratulate you on the public spirit you have recently shown in your resolution to improve the town drainage, for long a lasting reproach. May your efforts be crowned with success, and may Beaconsfield with its natural advantages soon take front rank with the healthiest residential towns of the United Kingdom.

I have the honour to be, Gentlemen,
Your obedient servant,
WILLIAM WILLOUGHBY KENNEDY.

BEACONSFIELD,
March, 1898.

[P.T.O.

APPENDIX I.

27, Great George Street,
Westminster, S.W.,
February 19*th*, 1896.

Analysis of sample of water taken by E. A. Sanaford Fawcett on 11/2/96, from the new Borehole at Amersham belonging to the "Amersham, Beaconsfield and District Waterworks Company, Ltd.," received in sealed basket.

Results.

Free Ammonia	parts per million	nil.
Albuminoid Ammonia	,, ,,	0·024
Oxygen absorbed by organic matter	grains per gallon	0·003
Nitrogen as nitrates and nitrites	,, ,,	0·104
Chlorine	,, ,,	0·85
Dissolved Solids	,, ,,	23·3
Hardness, Permanent	3·3 degrees	
Temporary	18·2 degrees	
		Total of 21·5 degrees
Alkalinity		18·5 dregrees

Remarks.

This water is of a high degree of organic purity as evidenced by the extremely small yield of albuminoid ammonia and nitrogen as nitrates and nitrites, by the small amount of oxygen absorbed and also by the absence of free ammonia. With regard to the mineral constituents of the water it will be noted that it contains 23·3 grains per gallon. The bulk of this consists of carbonate of lime which is always found in waters derived from chalk. The hardness is not excessive and it is to be noted that the bulk of the hardness is temporary so that the water on boiling becomes well suited for dietetic domestic and washing purposes. There can be no hesitation in using this water for a supply to any locality as it is one of the purest waters I have ever analysed.

(Signed) G. MIDGLEY TAYLOR.

APPENDIX II.

Examination of a Sample of Drinking Water.

24th March, 1898.

SOURCE AND POSSIBILITY OF CONTAMINATION—Sample of Water taken with usual precautions from tap in Burke House, Beaconsfield, supplied with water from the "Amersham, Beaconsfield and District Waterworks Company, Ltd."

CHEMICAL AND PHYSICAL EXAMINATION.

1. Colour in 9-in. Column—None.

   Turbidity—Turbid only on boiling: precipitate being carbonate of lime.
2. Odour—None.
3. Residue left on evaporation—Considerable white residue: no charring of residue: no smell: residue chiefly carbonate of lime.
4. Free Ammonia—None.
5. Chlorine—Less than 1 grain per gallon.

   Equivalent of Common Salt—About 1½ grains per gallon.
6. Nitrites—None.
7. Nitrates—About $\frac{1}{10}$ grain per gallon.
8. Hardness—Total about 25 degrees: about 5 degrees of permanent hardness.
9. Lead—None.
10. Zinc, Iron, and Copper—None.
11. Oxygen absorbed in 15 min. at 212° F.—Less than $\frac{1}{100}$ grain per gallon.

BEACONSFIELD,

24th March, 1898.

From the examination of the source of the water herein referred to, and the results obtained by analysis, I am of opinion that the water is a very pure one, and remarkably free from organic matter. The hardness is chiefly temporary. The water is excellent for all dietetic and domestic purposes.

WILLIAM WILLOUGHBY KENNEDY,

Medical Officer of Health, Beaconsfield.

APPENDIX III.

Examination of a Sample of Drinking Water, taken at random from a private shallow Well in Beaconsfield.

25th March, 1898.

SOURCE AND POSSIBILITY OF CONTAMINATION—Water taken by Mr. Kennedy from pump from shallow well (X) in gravel soil in private house in High Street, Beaconsfield. Cesspool about 25 feet from well.

CHEMICAL AND PHYSICAL EXAMINATION.

1. Colour in 9-in. Column—Slightly yellow.
   Turbidity—Marked yellowish turbidity on boiling.
2. Odour—Unpleasant on boiling.
3. Residue left on evaporation—Considerable yellowish residue: Residue chars on heating strongly, and gives off unpleasant smell.
4. Free Ammonia—Abundant.
5. Chlorine—About 7 grains per gallon.
   Equivalent of Common Salt—About 11½ grains per gallon.
6. Nitrites—Reaction very marked: abundant.
7. Nitrates—At least 2 grains per gallon.
8. Hardness—About 33 degrees; about half of which is permanent.
9. Lead—None.
10. Zinc, Iron, and Copper—None.
11. Oxygen absorbed in 15 min. at 212° F.—About ⅕ grain per gallon.

BEACONSFIELD,
25th March, 1898.

Water from private Well (X) in High Street, Beaconsfield.

From the examination of the source of the water herein referred to, and the results obtained by analysis, I am of opinion that the water is dangerously polluted by organic matter of animal (probably human) origin. The presence of *nitrites* even in small quantities is sufficient to condemn a water for drinking purposes; and this sample contains *nitrites* in abundance. It is quite unfit for drinking and cooking purposes; as the whole analysis shows organic pollution. This is the only water supply to the house where the well is situated, and it was considered "*very good*" by the tenant of the house.

WILLIAM WILLOUGHBY KENNEDY,
Medical Officer of Health, Beaconsfield.